# UNITED STATES PATENT AND TRADEMARK OFFICE

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| 10/014,601 | 12/14/2001 | Chien-Soon Wu | WUCH3014/EM | 2037 |

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| EXAMINER |
|---|
| POLLACK, MELVIN H |

| ART UNIT | PAPER NUMBER |
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| 2145 | |

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on <u>14 December 2001</u>.

2a)☐ This action is **FINAL**.    2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) <u>1-9</u> is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-9</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>14 December 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some *  c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☒ Other: *see attached office action.*

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1.     The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.     Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Somer

(6,052,362) in view of Crayford et al. (6,151,316) and Booth, III, et al. (6,816,462).

3.     For claims 1 and 7, Somer teaches a method (abstract) for a multi-level loopback test

(col. 1, line 1 – col. 3, line 8) wherein a loopback test device (Fig. 2, #250) is installed (col. 4,

lines 50-55) between an Ethernet switch in a community (Fig. 2, #230; repeater) and a

community network system in a central office (Fig. 2, #243) so that during the loopback test on

the community network system in the central office (col. 4, lines 35-45), the loopback test device

is operated by the network management system (Fig. 9, #910) to perform the steps of:

    a.     In a first level of the loopback test, commanding the network management system

to issue at least one test packet (Fig. 9, #940) wherein it is determined whether a reply

packet has been received from the loopback test device within a predetermined period of

time (col. 13, lines 39-49), if yes and it is determined whether information contained in

the reply packet shows that an I/O port of the loopback test device is normally coupled to

an Ethernet switch in the community (col. 5, line 50 – col. 6, line 10); and

    b.     In a second level of the loopback test, the network management system in the

central office issuing at least one test packet (Fig. 9, #940) wherein it is determined

whether all of the packets sent to the I/O port from the network management system in

the central office are sent back to the network management system in the central office

without having any change (col. 13, lines 15-55), if yes, it means that there is a differing

problem, and otherwise if not all of the packets sent to the I/O port from the network

management system in the central office are sent back to the network management

system in the central office, it means that the loopback test device is faulty (col. 13, lines

55-60).

4.      Somer does not expressly disclose that the test packet is a special BPDU (Bridge Protocol

Data Unit) packet. Crayford teaches a method (abstract) of performing Ethernet switch loopback

testing (col. 1, line 1 – col. 3, line 37) in which the test packets are BPDU packets 9 (col. 16,

lines 1-8). At the time the invention was made, one of ordinary skill in the art would have used

BPDUs in Somer in order to establish spanning trees to eliminate redundant data links (col. 16,

lines 8-9).

5.      Somer does not expressly disclose testing for disconnections. Booth teaches a method

(abstract) of isolating link failures (col. 1, line 1 col. 4, line 27) by utilizing packet transmissions

to track successful receptions (col. 6, lines 39-63) in a loopback environment (col. 8, lines 18-

44). At the time the invention was made, one of ordinary skill in the art would have added Booth

testing to the Somer testing method in order to avoid a situation where Somer waits forever for a

packet, and to determine if the systems are working properly (col. 1, line 65 – col. 2, line 6).

6.      For claim 2, Somer does not expressly disclose that in step (a) of the first level of the

loopback test when the network management system has received the reply packet from the

loopback test device within the predetermined period of time, in response it is determined

whether information contained in the reply packet shows that the I/O port is normally coupled to the Ethernet switch in the community, if yes, it means that the first level of the loopback test is a success, and in response a third level of the loopback test is performed wherein the network management system in the central office issues at least one Ping instruction and determines whether there is a reply from the Ethernet switch in the community within the predetermined period of time, if yes, it means that the community network system operates normally, and otherwise, it means that there is a software fail in the Ethernet switch. Booth teaches this third step (col. 8, line 55 – col. 9, line 30). At the time the invention was made, one of ordinary skill in the art would have utilized Ping instructions to determine switch replies in order to more easily isolate problems within large networks (col. 2, lines 8-13).

7.      For claim 3, Somer does not expressly disclose that, in step (a) of the first level of the loopback test it is determined whether there is a hardware fail between the network management system in the central office and the loopback test device or between the network management system in the central office and the Ethernet switch wherein the network management system issues at least one special BPDU packet, when an Ethernet control circuit of the loopback test device receives at least one special BPDU packet, the Ethernet control circuit will send the same to a packet transmission and receiving control circuit, and in response, the packet transmission and receiving control circuit changes a source address of the BPDU packet into a specific source address which is in turn sent back to the network management system in the central office via the Ethernet control circuit. Crayford teaches that these packets (Fig. 9) will have their addresses modified (col. 11, lines 30-45) in the manner specified above (col. 12, line 62 – col. 13, line 50). At the time the invention was made, one of ordinary skill in the art would have used the Crayford

system in Somer to improve Somer's testing abilities through robust analysis (col. 17, line 49 – col. 18, line 15).

8.      For claim 4, Somer does not expressly disclose that in step (a) of the first level of the loopback test the reply packet is filled with status information of the I/O port coupled to the Ethernet switch so that the network management system in the central office is capable of determining whether a communication line is faulty or not after the reply packet has been received and determining whether the I/O port is normally coupled to the Ethernet switch in the community. Crayford teaches the status reply management (Fig. 10; col. 11, lines 30-65). At the time the invention was made, one of ordinary skill in the art would have added Crayford to Somer in order to handle statistical diagnostics (col. 1, lines 30-40).

9.      For claims 5 and 8, Somer teaches that in step (b) of the second level of the loopback test it is determined whether there is a fail between the loopback test device and the Ethernet switch in the community wherein the network management system issues at least one special BPDU packet, when the Ethernet control circuit of the loopback test device receives a special BPDU packet for enabling a loopback test mode (Fig. 9, #910), the packet transmission and receiving control circuit will command the Ethernet control circuit to enable the I/O port coupled to the Ethernet switch in the community enter into the loopback test mode so that all of the packets sent to the I/O port from the network management system in the central office are sent back to the network management system in the central office without any change, resulting in a completion of the loopback test (Fig. 4; col. 4, lines 24-46).

10.     For claims 6 and 9, Somer teaches that after completion of the loopback test, the network management system in the central office will issue at least one special BPDU packet for

finishing the loopback test mode wherein when the Ethernet control circuit of the loopback test device receives the special BPDU packet, the packet transmission and receiving control circuit of the loopback test device will command the Ethernet control circuit to enable the I/O port coupled to the Ethernet switch in the community enter into a normal mode (col. 7, lines 40-60; col. 10, line 54 – col. 11, line 60).

## *Conclusion*

11.    The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12.    Systems for testing loopback via packets:  Kukreja (6,173,325), Dawson (6,775,804), Lo et al. (6,260,167), Onishi et al. (6,147,972)

13.    Systems for testing link status and state: Ruane et al. (6,182,135), Arndt et al. (5,708,654), Dube et al. (6,199,172), Lindeborg et al. (6,857,027), Hirst et al. (6,173,411), Blevins et al. (6,615,090)

14.    Systems for self-diagnostics: Stewart et al. (6,529,480), Farooq (6,678,845), Walker et al. (6,862,701)

15.    Background teachings of Ethernet networks: Kogelnik et al. (6,684,031), Williams (5,189,663), Wang et al. (6,538,997), Gai et al. (6,032,194)

16.    System for monitoring I/O ports and related tests: Norris (5,878,030), McLean (6,128,658), Lee (5,737,316)

17.    Background teachings of BPDUs: Gundavelli (6,795,403)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin H Pollack whose telephone number is (571) 272-3887. The examiner can normally be reached on 8:00-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Valencia Martin-Wallace can be reached on (571) 272-6159. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MHP
29 March 2005

PATRICE WINDER
PRIMARY EXAMINER